

CLAIMS

1. A heat treatment apparatus comprising:
a susceptor rotatably provided in a heat treatment vessel, on which a substrate is placed;
a preheat ring surrounding a periphery of the susceptor to be close to and in non-contact with the susceptor, which is supported by a support section provided in the heat treatment vessel; and
a heating apparatus for heating a substrate placed on the susceptor,
wherein the preheat ring is formed such that an inner peripheral center is eccentric to an outer periphery of the preheat ring.

2. The heat treatment apparatus as claimed in claim 1, wherein the support section comprises a base on which a pocket for placing the preheat ring is formed.

3. The heat treatment apparatus as claimed in claim 1, wherein the inner peripheral center of the preheat ring corresponds to the center of the susceptor.

4. The heat treatment apparatus as claimed in claim 2, wherein a size of an outer diameter of the preheat ring and a size the pocket of the base are set to form a

predetermined clearance between a pocket inner periphery of the base and an outer periphery of the preheat ring.

5. A heat treatment method comprising: moving the preheat ring, which is supported by the support section in the heat treatment apparatus as claimed in claim 1, around the susceptor; positioning the preheat ring to minimize a distance between the inner peripheral center of the preheat ring and the center of the susceptor; thereafter, placing a substrate on the susceptor; and performing a heat treatment to the substrate.

6. A heat treatment method comprising: moving the preheat ring, which is placed on the base in the heat treatment apparatus as claimed in claim 2, in the pocket; positioning the preheat ring to minimize a distance between the inner peripheral center of the preheat ring and the center of the susceptor; thereafter, placing a substrate on the susceptor; and performing a heat treatment to the substrate.

7. The heat treatment method as claimed in claim 5 or 6, wherein after positioning the preheat ring, the substrate placed on the susceptor is subjected to a vapor phase growth of a thin film.